NOAA
BAY SHIP

GENERAL NOTES

1. ARABIC NUMERALS WITH THE LETTERS "PROJ" ABOVE REPRESENT NAVIGATIONAL DRAFT MARKS. REMAINING ARABIC NUMERALS REPRESENT CALCULATIVE DRAFT MARKS.

2. DIMENSIONS:
   (A) LONGITUDINAL LOCATIONS OF ALL ITEMS ARE GIVEN FROM THE STERN REFERENCE POINT (AFT END OF MAIN DECK AT CENTERLINE).
   (B) HEIGHTS OF ALL ITEMS ARE GIVEN FROM THE SHIP'S BASELINE, LOCATED AT THE KNUCKLE OF THE KEEL, 98mm AFT OF FR 82. (5 4)
   (C) LONGITUDINAL LOCATIONS AND HEIGHTS OF SIDE BLOCKS ARE TAKEN TO THE AFT SIDE OF BLOCKS.
   (D) REFERENCE DIMENSIONS FOR DOCKING PLUGS ARE TAKEN FROM THEIR CENTER.

3. COMPLETE PAINTING OF HULL:
   (A) IN ORDER TO CLEAN AND PAINT THE ENTIRE BOTTOM OF THE VESSEL IN THREE SUCCESSIVE DOCKINGS. THE FOLLOWING POSITIONS OF THE VESSEL ARE NECESSARY: (1 1)
      (1) POSITION NO. 1
      ~~AFTER END OF MAIN DECK (POINT OF REFERENCE) IS PLACED 12162mm AFT OF AFTER SIDE OF NO.1 SIDE BLOCK.~~
      (2) POSITION NO. 2
      ~~AFTER END OF MAIN DECK (POINT OF REFERENCE) IS PLACED 13381mm AFT OF AFTER SIDE OF NO.1 SIDE BLOCK.~~
      (3) POSITION NO. 3
      ~~AFTER END OF MAIN DECK (POINT OF REFERENCE) IS PLACED 10942mm AFT OF AFTER SIDE OF NO.1 SIDE BLOCK.~~
   (B) REPEAT CYCLE OF POSITIONS. ASCERTAIN FROM VESSEL THE POSITION OF VESSEL AT ITS LAST DOCKING.

4. DIMENSIONS IN THE TABLE OF OFFSETS ARE PROVIDED IN MILLIMETERS AND FT/IN.

5. KEEL BLOCKS SHALL BE CONFIGURED TO CLEAR DRAIN PLUGS.

6. BLOCKING:
   (A) BLOCKING SHOWN ON THIS PLAN IS THAT REQUIRED FOR BLOCKING UNDER ORDINARY UNDAMAGED CONDITIONS.
   (B) KEEL BLOCKS:
      (1) KEEL BLOCKS, EXCEPT NO. 1, SHALL BE ARRANGED IN PIERS CONSISTING OF 914mmx914mmx305mm HARDWOOD TIMBERS MOUNTED WITH 50 MM MIN THICKNESS SOFTWOOD CAP BLOCKS, UNO. LONGITUDNAL SPACING AND ALL OTHER NEEDED INFO IS LISTED IN KEEL BLOCK TABLE OF OFFSETS.
      (2) KEEL BLOCK NO. 1 SHALL BE 555mmx914mmx305mm AND COLLAPSIBLE. (5 5)
      (3) NO BLOCKS OR SHORES ARE REQUIRED UNDER ORDINARY CONDITIONS OF DOCKING UNDER THE STERN AFT OF FRAME 83.
   (C) SIDE BLOCKS:
      (1) SIDE BLOCKS SHALL BE LOCATED (P) AND (S) UNDER MAJOR TRANSVERSE OR LONGITUDINAL STRUCTURE AT DISTANCES OFF CENTERLINE AS INDICATED ON TABLE OF OFFSETS.
      (2) SOFTWOOD CAPS ARE REQUIRED, 50 MM MIN THICKNESS.
      (3) SIDE BLOCKS ARE NUMBERED FROM AFT TO FORWARD WITH THE MOST AFT BLOCK AS NO. 1.

7. ALLOWABLE BLOCK PRESSURE IS 500 PSI (35.15 KG/CM^2).
8. VESSEL DISPLACEMENT USED FOR BLOCK BEARING PRESSURES IS APPROXIMATELY 2440.97 MT IN DEPARTURE CONDITIONS.
9. THE CENTERBOARD MUST BE RETRACTED DURING DOCKING EVOLUTIONS.
10. VESSEL MUST BE DOCKED WITHOUT LIST AND EXCESSIVE TRIM. MAXIMUM ALLOWABLE TRIM IS 580 MM.
11. BLOCKS IN EXCESS OF 1829 MM IN HEIGHT SHALL BE STRAPPED TOGETHER USING ANGLES, AND SIDE BLOCKS SHALL BE TIED TOGETHER LONGITUDINALLY WITH STEEL RODS.
12. A HARD CAP IN CONJUNCTION WITH A SOFT WOOD STRATUM BELOW MUST BE USED FOR KEEL BLOCKS 1–4, 16 & 17.
13. DRYDOCK BEARING PRESSURES DERIVED FROM REFERENCE 12 & 13.
14. SIDE BLOCKS IN EXCESS OF 1829 MM IN HEIGHT SHALL HAVE A BASE 3X WIDER AT THE BOTTOM THAN AT THE TOP.
15. ADD OUTBOARD BLOCK #1 P/S AFTER VESSEL IS LANDED IF KEEL BLOCK #1 IS NEEDED TO BE REMOVED FOR DRAIN PLUG ACCESS OR PAINTING (3 1)
16. KEEL BLOCK #1 TO BE REMOVED AFTER VESSEL IS LANDED FOR PAINTING OR WHEN ACCESS TO DRAIN PLUGS IS NECESSARY.

CRITICAL DIMENSIONS

LENGTH OVERALL	=	63.57 m
LENGTH BETWEEN PERPENDICULARS	=	58.00 m
LENGTH ON DWL	=	61.00 m
BEAM, EXTREME	=	15.00 m
BEAM, ON DWL AT STA OF MAX AREA	=	15.00 m
BEAM, ON DWL AT MIDSHIPS	=	15.00 m
DRAFT, TO DWL, AMIDSHIPS	=	5.35 m
DRAFT, MLD BASELINE TO DWL	=	5.90 m
SLOPE OF KEEL DRAG	=	1: 37.12

BASELINE LOCATED .55 m BELOW MLD KEEL AT MIDSHIPS
COMPLEMENT 39 (TOTAL)

DISPLACEMENT PROPERTIES

VESSEL CONDITION	DISPLACEMENT	FWD DRAFT (M) @ FP	MEAN DRAFT (M) @ MIDSHIPS	AFT DRAFT (M) @ AP	VCG (M, ABL)	LCG (AFT OF FP)
LIGHTSHIP (WEIGHT REPORT, REV 10)	1786.69	5.000	5.000	5.000	7.360	32.495
VESSEL IN BURNT OUT CONDTION	2279.70	5.361	5.679	5.997	7.282	29.976
VESSEL IN DEPARTURE CONDTION	2440.97	6.136	5.988	5.839	7.194	29.272

REVISIONS

REV	ZONE	DESCRIPTION	DATE	APPROVED
5	49–A	1. SH 7, ADDED SHEET W/ CONVERTED KEEL BLOCK AND SIDE BLOCK OFFSETS TO FT–IN–EIGHTHS, BEARING PRESSURES TO PSI.	–	–
	40–B	2. SH 6, CORRECTED KEEL BLOCK HEIGHT TO MEASURED VALUES AS PER REFERENCE 14.		
	33–A	3. SH 5, CORRECTED SIDE BLOCK HEIGHTS TO AVERAGE OF MEASURED VALUES AS PER REFERENCE 14.		
	48–D	4. MODIFIED KEEL BLOCK REFERENCE HEIGHT FROM 547mm TO ZERO.		
	8–C	5. REDUCED KEEL BLOCK NO. 1 LENGTH, ELIMINATING NOTCH.		

REVISIONS

REV	ZONE	DESCRIPTION	DATE	APPROVED
1	8–D 40–B 36–D	1. SH 1, GENERAL NOTES: REVISED G.N. 3 TO DELETE INCORRECT REFERENCE LOCATIONS. CORRECT LOCATIONS PROVIDED ON SHT 5. 2. SH 5, SIDE BLOCK POSITION NO. 2 TABLE: CORRECTED REFERENCE LOCATIONS FOR #1 OB AND #6 OB FROM 13210 AND 37610 TO 12610 AND 37810, RESPECTIVELY. 3. SH 5, SIDE BLOCK POSITION NO. 3 TABLE: CORRECTED REFERENCE LOCATION FOR #1 OB FROM 11991 TO 11400. ITEMS 1 – 3 PER ENGINEERING DEVELOPMENT	11/3/03 AGE	11/3/03 RG
2		1. SH 2, ELEV. 13–A: ADDED TRANSDUCER APPENDAGE AFT OF KEEL BLOCK #15. CORRECTED ELEVATION CALLOUT FROM "13–C" TO "13–A". 2. SH 2, PLAN 13–C: CORRECTED LOCATION AND SHAPE OF TRANSDUCER APPENDAGE. SPLIT KEEL BLOCK #15 TO PORT AND STARBOARD LOCATIONS, 580 OCL, TO CLEAR TRANSDUCER APPENDAGE. CORRECTED PLAN CALLOUT FROM "13–A" TO 13–C". 3. SH 3, PLAN 20–A: CORRECTED LOCATION AND SHAPE OF TRANSDUCER APPENDAGE. MOVED KEEL BLOCK #15 TO POSITION #2 LOCATION TO CLEAR TRANSDUCER APPENDAGE. 4. SH 3, PLAN 20–C: CORRECTED LOCATION AND SHAPE OF TRANSDUCER APPENDAGE. 5. SH 6, TABLE FOR KEEL BLOCK NO. 1–17: REVISED BLOCK BEARING PRESSURES FOR BLOCK #15, POSITION 1, FROM 1.755 TO 0.878. REVISED LONGITUDINAL LOCATION AND HEIGHTS FOR BLOCK #15, POSITION 3 TO SUIT RELOCATION TO CLEAR TRANSDUCER. ITEMS 1 – 5 PER ENGINEERING DEVELOPMENT	5/26/04 AGE	5/27/04 RG
3		1. SH 1, GENERAL NOTES: ADDED GENERAL NOTES 15 AND 16. 2. SH 2, ELEVATION 13–A: REVISED LOCATION OF SONAR TRANSDUCER FROM FRAME 25 TO FRAME 23. DELETED KEEL BLOCK #15. 3. SH 2, PLAN 13–C: REVISED LOCATION OF SONAR TRANSDUCER FROM FRAME 25 TO FRAME 23; RENAMED INBOARD BLOCK #3 TO #4 AND ADDED NEW INBOARD BLOCK #3; ADDED NOTE REGARDING OPTIONAL USE OF OUTBOARD BLOCKS 1–3 P/S. 4. SH 3, PLAN 20–A: REVISED LOCATION OF SONAR TRANSDUCER FROM FRAME 25 TO FRAME 23; RENAMED INBOARD BLOCK #3 TO #4 AND ADDED NEW INBOARD BLOCK #3; ADDED NOTE REGARDING OPTIONAL USE OF OUTBOARD BLOCKS 1–3 P/S; ADDED REFERENCE TO G.N. 15 TO KEEL BLOCK #1 AND OUTBOARD BLOCK #1. 5. SH 3, PLAN 20–C: REVISED LOCATION OF SONAR TRANSDUCER FROM FRAME 25 TO FRAME 23; RENAMED INBOARD BLOCK #3 TO #4 AND ADDED NEW INBOARD BLOCK #3; ADDED NOTE REGARDING OPTIONAL USE OF OUTBOARD BLOCKS 1–3 P/S. 6. SH 5, TABLES FOR SIDE BLOCK POSITION 1– 3: REVISED BEARING PRESSURES PER BLOCK TO SUIT KEEL BLOCK 15 DELETION; PROVIDED OPTION TO USE OUTBOARD BLOCKS 1 THRU 3 EXCEPT AS NOTED PER GN 15. RENAMED #3 IB TO #4 IB AND ADDED NEW IB BLOCK #3. 7. SH 6, TABLE FOR KEEL BLOCK 1–17: DELETED KEEL BLOCK 15 FROM TABLE TO CLEAR TRANSDUCER INTERFERENCE; ADDED REFERENCES TO GN 15 AND 16 TO KEEL BLOCK 1; REVISED BEARING PRESSURES PER BLOCK TO SUIT KEEL BLOCK DELETION. ITEMS 1 – 7 PER M282 REWORK #701–0002	7/13/04 AGE	7/16/04 RG
4		1. SH 2, PLAN 13–C: DELETED ALL OUTBOARD SIDE BLOCKS; RELOCATED INBOARD SIDE BLOCK #3 FROM 27 TO FRAME 30; REVISED FAIRING COMPOUND EXTENTS IWO PORT TRANSDUCER NEAR SIDE BLOCKS TO REFLECT AS–BUILT CONDITION. 2. SH 3, PLAN 20–C: DELETED ALL OUTBOARD SIDE BLOCKS EXCEPT FOR OUTBLOCK #1; RELOCATED INBOARD SIDE BLOCK #3 FROM 23 TO FRAME 27; REVISED FAIRING COMPOUND EXTENTS IWO PORT TRANSDUCER NEAR SIDE BLOCKS TO REFLECT AS–BUILT CONDITION. 3. SH 3, PLAN 20–A: DELETED ALL OUTBOARD SIDE BLOCKS EXCEPT FOR OUTBLOCK #1; ADDED INBOARD SIDE BLOCK #5 AT FRAME 19, 1587 OCL; REVISED FAIRING COMPOUND EXTENTS IWO PORT TRANSDUCER NEAR SIDE BLOCKS TO REFLECT AS–BUILT CONDITION. 4. SH 4, SECTION 20–A: DELETED OUTBOARD SIDE BLOCKS. 5. SH 4, SECTION 23–A: DELETED OUTBOARD SIDE BLOCKS. 6. SH 5, SIDE BLOCK POSITION NO. 1 TABLE: DELETED OUTBOARD BLOCKS 1 THRU 6; CHANGED LOCATION OF INBOARD BLOCK #3; REVISED BEARING PRESSURES TO SUIT NEW BLOCK ARRANGEMENT; CORRECTED BLOCK HEIGHTS; ADDED BLOCK MIDSPAN HEIGHT. 7. SH 5, SIDE BLOCK POSITION NO. 2 TABLE: DELETED OUTBOARD BLOCKS 2 THRU 6; CHANGED LOCATION OF ALL INBOARD BLOCKS; REVISED BEARING PRESSURES TO SUIT NEW BLOCK ARRANGEMENT; CORRECTED BLOCK HEIGHTS; ADDED BLOCK MIDSPAN HEIGHT. 8. SH 5, SIDE BLOCK POSITION NO. 3 TABLE: DELETED OUTBOARD BLOCKS 2 THRU 6; CHANGED LOCATION OF ALL INBOARD BLOCKS; REVISED BEARING PRESSURES TO SUIT NEW BLOCK ARRANGEMENT; CORRECTED BLOCK HEIGHTS; ADDED BLOCK MIDSPAN HEIGHT. 9. SH 6, TABLE FOR KEEL BLOCK: REVISED BEARING PRESSURES TO SUIT NEW BLOCK LAYOUTS. ITEMS 1 – 9 PER TRIAL CARD 1 B 001 OP 01	8/31/04 AE/RW	9/1/04 RG

REFERENCES

NO.	TITLE	DRAWING NUMBER
14	SPATIAL INTEGRATED SYSTEMS 4/4/06 SURVEY REPORT	JN 301538–001
13	DOCKING INSTRUCTIONS & ROUTINE WORK IN DRYDOCK	NAVSEA 59086–7G–STM–000
12	AN INTRODUCTION TO DRYDOCKING PRINCIPLES & TECHNIQUES	–
11	TRANSDUCER ARRANGEMENTS & INSTALLATION	M279–461–FE93
10	OUTBOARD PROFILE	M279–085–FA01
9	BILGE KEEL LAYOUT	M279–100–FH54
8	MOORING & TOWING FITTINGS–KEY PLAN & FDNS	M279–170–FH28
7	IMPRESSED CURRENT CATHODIC PROTECTION ARRG'T & DET	M279–624–FE70
6	BOSSING & STERN FRAME SCANTLINGS	M279–110–FH18
5	HULL TRANSOM SCANTLINGS, FR 82–TRANSOM	M279–100–FH05
4	HULL STERNBODY SCANTLINGS, FR 49–82	M279–110–FH04
3	HULL MIDBODY SCANTLINGS, FR 19–49	M279–110–FH03
2	HULL FOREBODY SCANTLINGS, FR 0–18	M279–100–FH02
1	GENERAL ARRANGEMENT	M279–085–FA02

DRAWING INDEX

SH	DESCRIPTION
7	KEEL & SIDE BLOCK OFFSETS IN ENGLISH UNITS
6	HULL OPENINGS/DISCHARGES & KEEL BLOCK OFFSETS TABLES
5	SIDE BLOCK OFFSETS & BEARING PRESSURES
4	BLOCKING ARRANGEMENT–SECTIONS
3	BLOCKING ARRANGEMENT–PLAN VIEWS
2	BLOCKING ARRANGEMENT–PLAN & ELEVATION
1	TITLE SHEET

RESERVATIONS

AS BUILT

REVISION STATUS
REV: 5 5 5 5 5 5 5 5
SHT: 10 9 8 7 6 5 4 3 2 1

DRL NUMBERS

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VT Halter Marine, Inc.
Vision Technologies Systems

DRAWN BY RW 6/11/03	ABS APPV	VESSEL	FRV40 CLASS 63m FISHERIES RESEARCH VESSEL
CHECKED BY AE/RG 7/4/03	USCG APPV	TITLE	DOCKING DRAWING
APPROVED BY AGE 7/9/03	OWNER APPV		

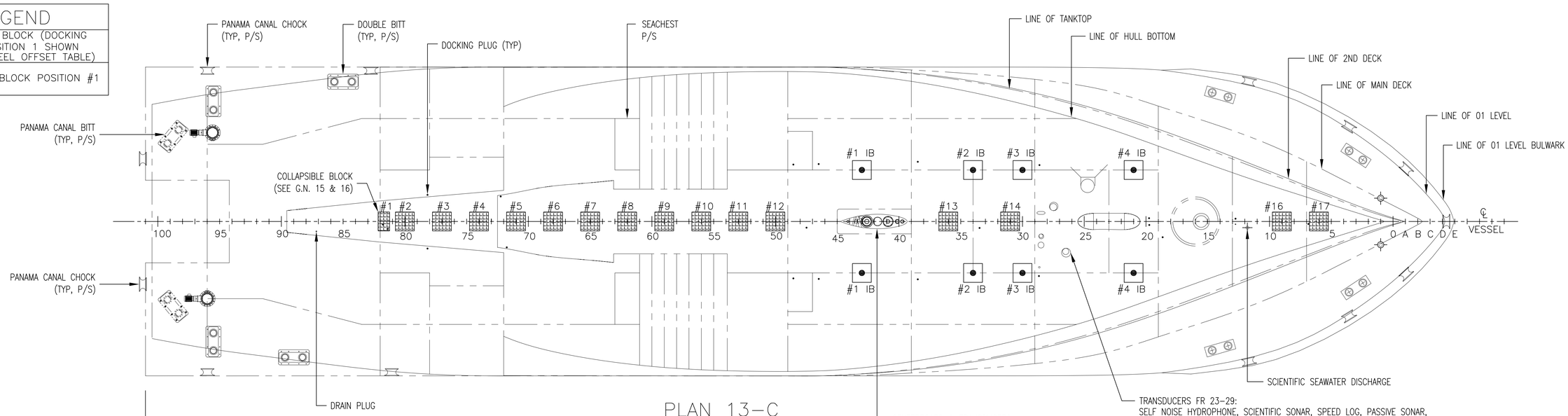
HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1944	3B213	D	OD	085	FA04	001	05
ESTIMATE NO 00–104	SCALE NONE		FILE R:\M279\FUNCTIONAL DESIGN\IN WORK\HULLDWG			SHEET 1 OF 7	

DWG NO. OD–085–FA04 SH 1

PLOT: 1=1

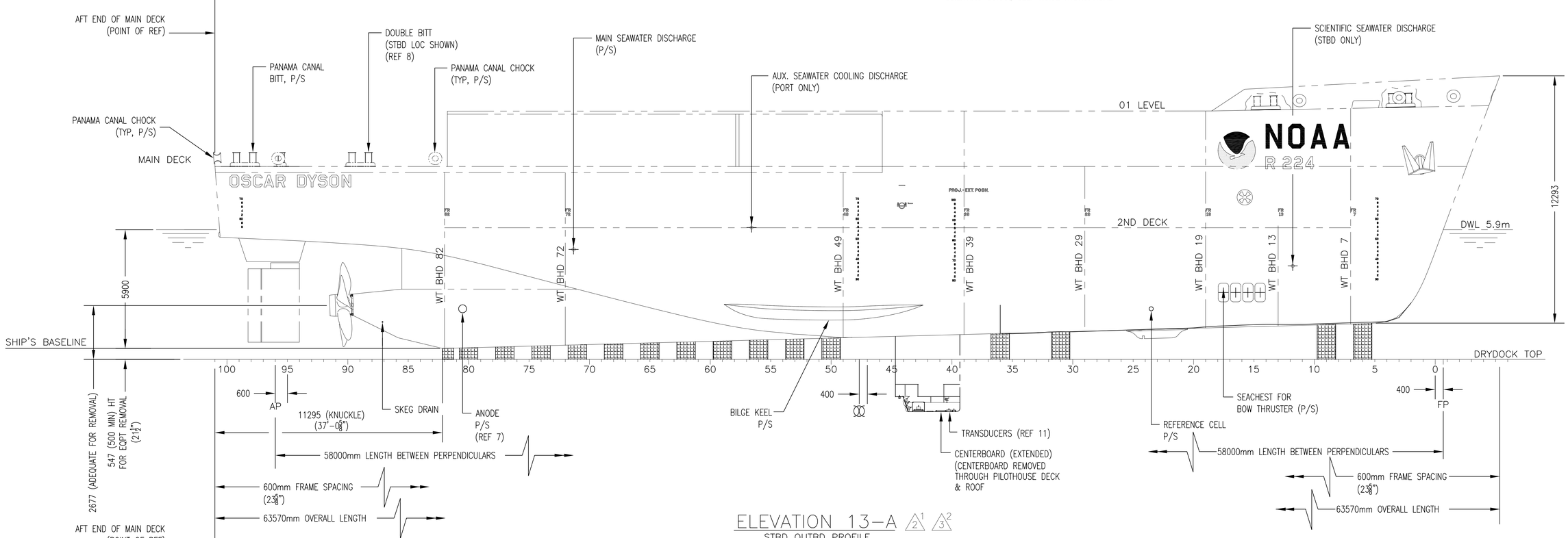
LEGEND

- KEEL BLOCK (DOCKING POSITION 1 SHOWN ON KEEL OFFSET TABLE)
- SIDE BLOCK POSITION #1


PANAMA CANAL CHOCK (TYP, P/S)
DOUBLE BITT (TYP, P/S)
DOCKING PLUG (TYP)
SEACHEST P/S
LINE OF TANKTOP
LINE OF HULL BOTTOM
LINE OF 2ND DECK
LINE OF MAIN DECK
LINE OF 01 LEVEL
LINE OF 01 LEVEL BULWARK
PANAMA CANAL BITT (TYP, P/S)
COLLAPSIBLE BLOCK (SEE G.N. 15 & 16)
#1 IB
#2 IB
#3 IB
#4 IB
#1 #2 #3 #4 #5 #6 #7 #8 #9 #10 #11 #12 #13 #14 #16 #17
100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0
A B C D E
℄ VESSEL
PANAMA CANAL CHOCK (TYP, P/S)
DRAIN PLUG
SCIENTIFIC SEAWATER DISCHARGE
TRANSDUCERS FR 23-29:
SELF NOISE HYDROPHONE, SCIENTIFIC SONAR, SPEED LOG, PASSIVE SONAR, SHIPS DEPTH FINDING, ELECTROMAGNETIC SPEED LOG, FISH FINDING, MULTI-BEAM ECHO SOUNDER-90 khz, MULTI BEAM ECHO SOUNDER TRANSMITTER
CENTERBOARD & TRANSDUCERS:
ACOUSTIC RELEASE, ACOUSTIC NET MENSURATION, ACOUSTIC NET MEN-SURATION HYDROPHONE, ACOUSTIC DOPPLER CURRENT PROFILER, SPARE X-DUCER, SCIENTIFIC SONAR, SELF NOISE HYDROPHONE

PLAN 13-C
BLOCK POSITION #1 △4[1] △2[2] △3[3]

STRUCTURE SHOWN FROM BOTTOM SHELL ONLY
(REF 2-6)



ELEVATION 13-A △2[1] △3[2]

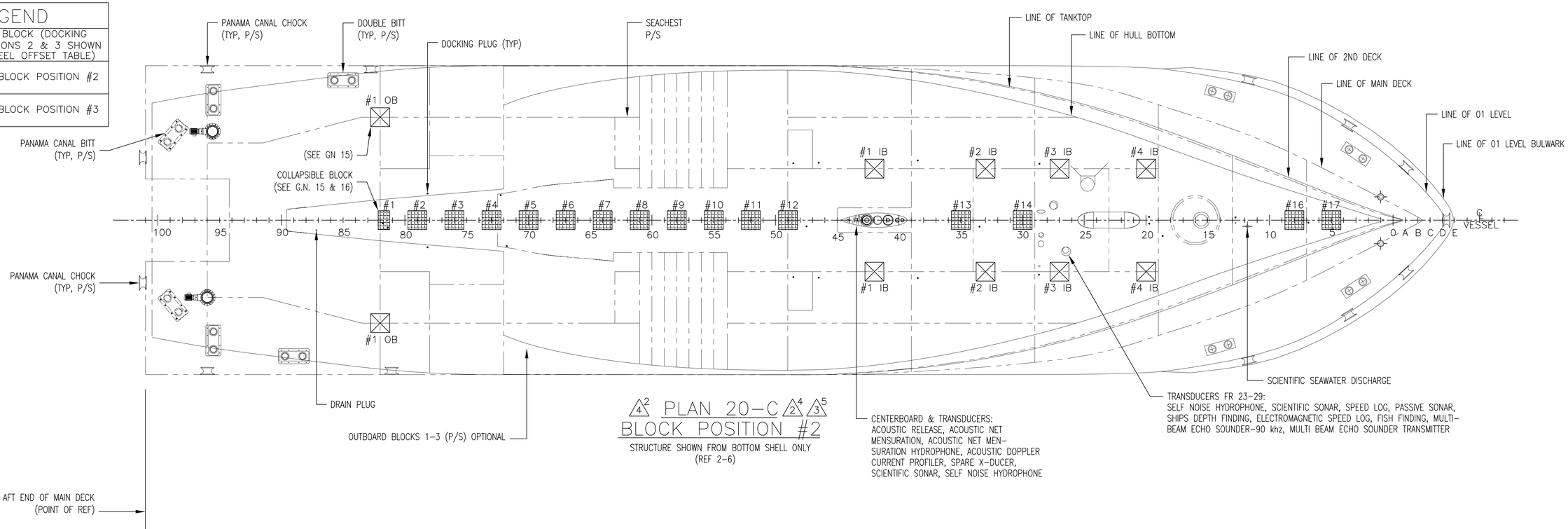
STBD OUTBD PROFILE
KEEL BLOCKS SHOWN
BULWARK & SUPERSTRUCTURE REMOVED FOR CLARITY
(REF 10)

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1944	3B213	D	OD	085	FA04	002	05
ESTIMATE NO	SCALE		FILE R:\M279\FUNCTIONAL DESIGN\IN WORK\HULLDWG			SHEET 2 OF 7	
00-104	1:100						

DWG NO. OD-085-FA04 SH 2

PLOT: 1=100

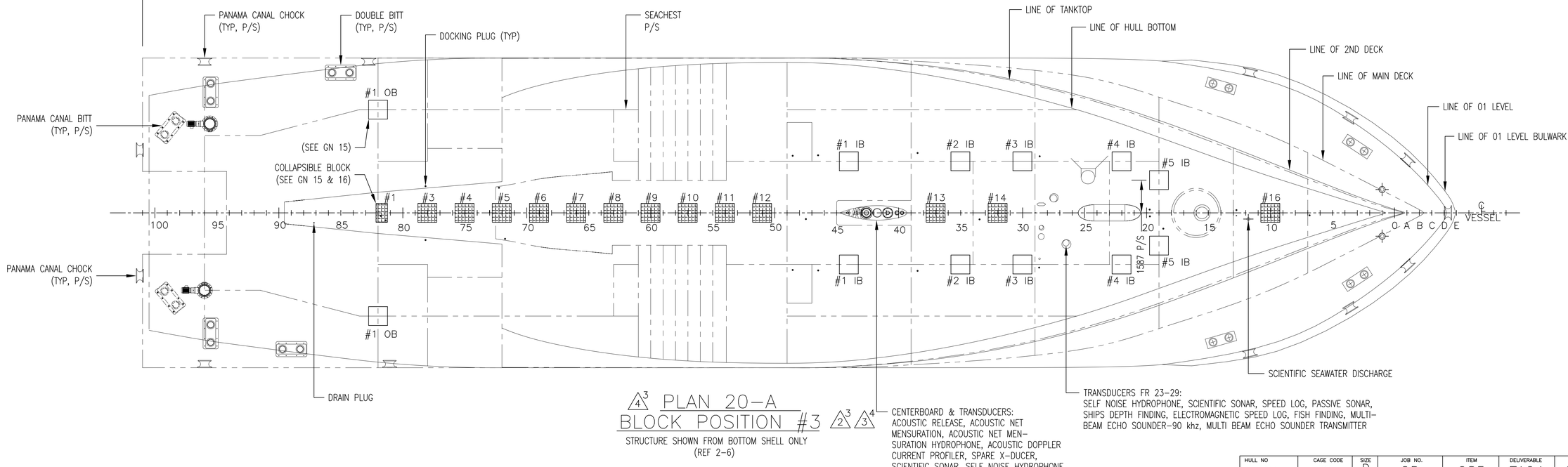
LEGEND	
▦	KEEL BLOCK (DOCKING POSITIONS 2 & 3 SHOWN ON KEEL OFFSET TABLE)
☒	SIDE BLOCK POSITION #2
☐	SIDE BLOCK POSITION #3



△4 2 PLAN 20-C △2 4 △3 5
BLOCK POSITION #2

STRUCTURE SHOWN FROM BOTTOM SHELL ONLY
(REF 2-6)

AFT END OF MAIN DECK (POINT OF REF)



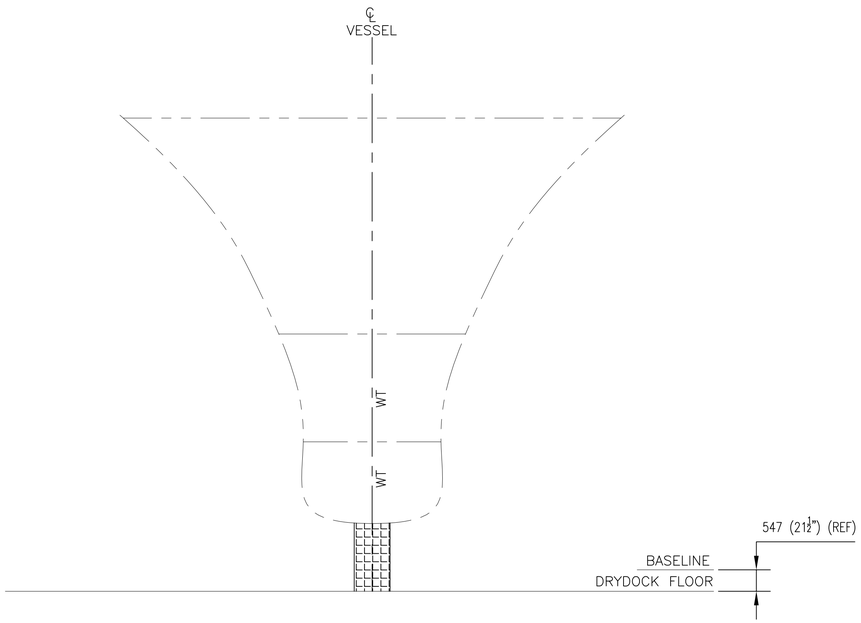
△4 3 PLAN 20-A
BLOCK POSITION #3 △2 3 △3 4

STRUCTURE SHOWN FROM BOTTOM SHELL ONLY
(REF 2-6)

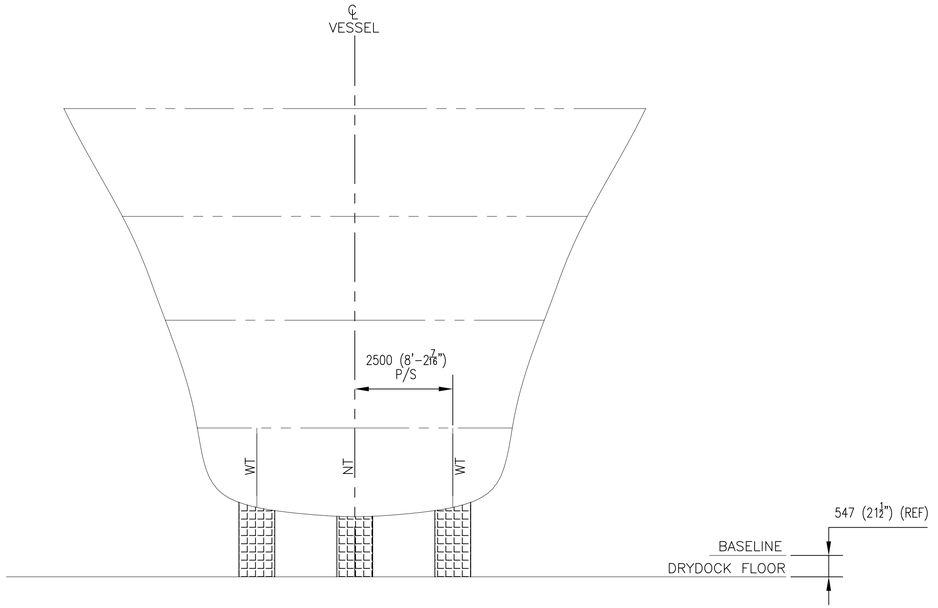
DWG NO. OD-085-FA04 SH 3

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1944	3B213	D	OD	085	FA04	003	05
ESTIMATE NO	SCALE		FILE R:\M279\FUNCTIONAL DESIGN\IN WORK\HULLDWG			SHEET 3 OF 7	
00-104	1:100						

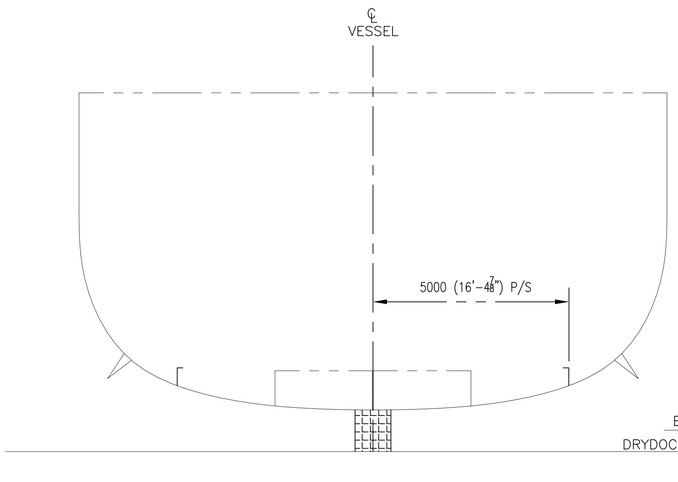
PLOT: 1=100



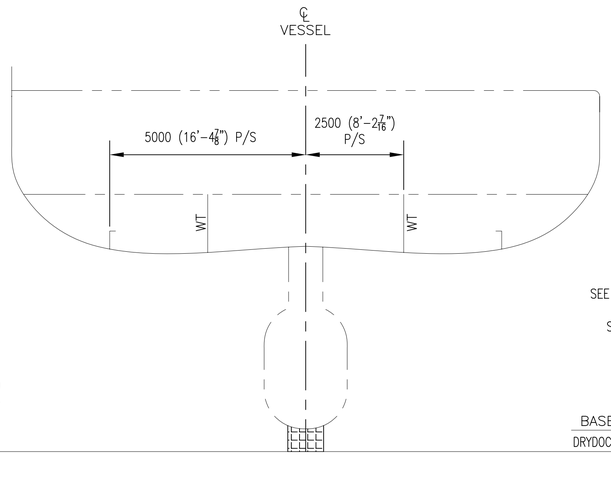
SECTION 23–C
FR 9 LKG FWD



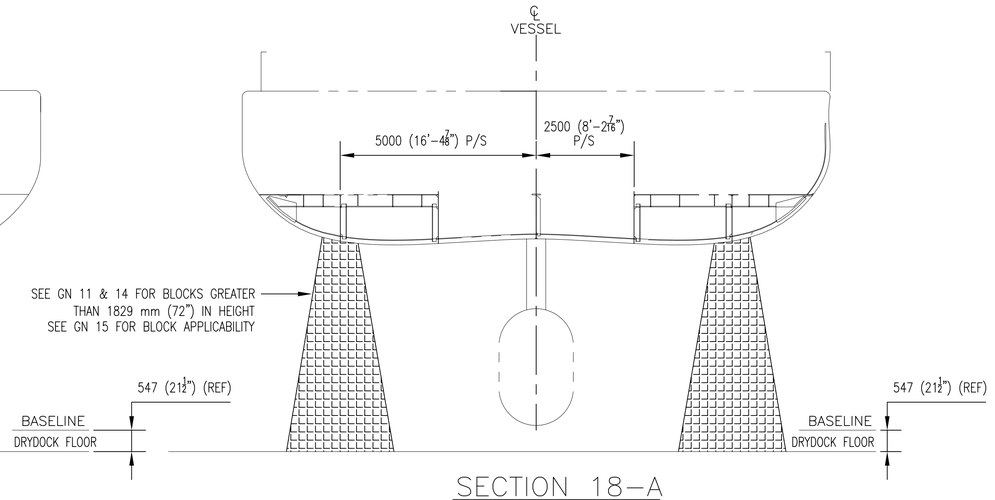
SECTION 20–C
FR 21 NT LKG FWD



SECTION 23–A
FR 50 LKG FWD
4 5



SECTION 20–A
FR 80 LKG FWD
4 4



SECTION 18–A
FR 83 LKG FWD

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1944	3B213	D	OD	085	FA04	004	05
ESTIMATE NO	SCALE		FILE R:\M279\FUNCTIONAL DESIGN\IN WORK\HULLDWG			SHEET 4 OF 7	
00–104	1:75						

PLOT: 1=75

DWG NO. OD–085–FA04 SH 4

SIDE BLOCK POSITION NO. 1 △3 6 △4 6 △5 3

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE						LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT (mm)	BEARING PRESSURES PER BLOCK (KG/CM^2)
	FWD INBD EDGE	FWD MIDSPAN	FWD OUTBD EDGE	AFT INBD EDGE	AFT MIDSPAN	AFT OUTBD EDGE		
~~#1 OB~~	~~4988~~		~~5175~~	~~5176~~		~~5344~~	~~12000~~	~~OPTIONAL~~
~~#2 OB~~	~~4011~~		~~4301~~	~~4227~~		~~4498~~	~~16200~~	~~OPTIONAL~~
~~#3 OB~~	~~3023~~		~~3386~~	~~3237~~		~~3586~~	~~20400~~	~~OPTIONAL~~
~~#4 OB~~	~~1733~~		~~2128~~	~~1849~~		~~2251~~	~~27000~~	~~4.242~~
~~#5 OB~~	~~1587~~		~~1917~~	~~1578~~		~~1918~~	~~31200~~	~~13.305~~
~~#6 OB~~	~~1817~~		~~2329~~	~~1767~~		~~2229~~	~~37200~~	~~5.757~~
#1 IB	702	738	785	676	713	761	34800	14.377
#2 IB	900	944	994	868	910	958	40200	1.670
#3 IB	975	1024	1086	948	994	1049	42600	14.290
#4 IB	1176	1274	1431	1136	1222	1357	48000	16.738

SIDE BLOCK POSITION NO. 2 △3 6 △4 7 △5 3

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE						LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT (mm)	BEARING PRESSURES PER BLOCK (KG/CM^2)
	FWD INBD EDGE	FWD MIDSPAN	FWD OUTBD EDGE	AFT INBD EDGE	AFT MIDSPAN	AFT OUTBD EDGE		
△1 2 #1 OB	4325	4402	4519	4529	4592	4694	12610	SEE G.N. 15
~~#2 OB~~	~~3867~~		~~4170~~	~~4083~~		~~4367~~	~~16810~~	~~OPTIONAL~~
~~#3 OB~~	~~2881~~		~~3252~~	~~3094~~		~~3453~~	~~21010~~	~~OPTIONAL~~
~~#4 OB~~	~~1675~~		~~2062~~	~~1768~~		~~2166~~	~~27610~~	~~4.313~~
~~#5 OB~~	~~1599~~		~~1929~~	~~1583~~		~~1915~~	~~31810~~	~~12.292~~
△1 2 ~~#6 OB~~	~~1853~~		~~2403~~	~~1800~~		~~2294~~	~~37810~~	~~5.516~~
#1 IB	721	757	804	692	729	776	35400	14.255
#2 IB	920	965	1016	889	932	981	40800	1.054
#3 IB	1031	1090	1170	1002	1055	1124	44400	6.321
#4 IB	1201	1304	1476	1163	1256	1406	48600	14.706

SIDE BLOCK POSITION NO. 3 △3 6 △4 8 △5 3

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE						LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT (mm)	BEARING PRESSURES PER BLOCK (KG/CM^2)
	FWD INBD EDGE	FWD MIDSPAN	FWD OUTBD EDGE	AFT INBD EDGE	AFT MIDSPAN	AFT OUTBD EDGE		
△1 3 #1 OB	4592	4654	4748	4771	4820	4905	11400	SEE G.N. 15
~~#2 OB~~	~~4155~~		~~4432~~	~~4371~~		~~4627~~	~~15591~~	~~OPTIONAL~~
~~#3 OB~~	~~3165~~		~~3519~~	~~3379~~		~~3719~~	~~19791~~	~~OPTIONAL~~
~~#4 OB~~	~~1806~~		~~2207~~	~~1944~~		~~2348~~	~~26391~~	~~4.165~~
~~#5 OB~~	~~1580~~		~~1916~~	~~1580~~		~~1931~~	~~30591~~	~~12.561~~
~~#6 OB~~	~~1783~~		~~2261~~	~~1738~~		~~2172~~	~~36591~~	~~5.888~~
#1 IB	684	721	769	662	701	750	34200	14.979
#2 IB	879	922	970	845	886	934	39600	2.489
#3 IB	975	1024	1086	948	994	1050	42600	14.728
#4 IB	1150	1239	1382	1110	1188	1309	47400	7.200
#5 IB	1142	1165	1221	1103	1132	1189	49200	14.173

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1944	3B213	D	OD	085	FA04	005	05
ESTIMATE NO	SCALE		FILE R:\M279\FUNCTIONAL DESIGN\IN WORK\HULLDWG			SHEET 5 OF 7	
00-104	NONE						

DWG NO. OD-085-FA04 SH5

PLOT: 1=1

TABLE FOR KEEL BLOCK NO. 1–17					3(7) 4(9) 5(2)
BLK NO	DOCKING POSITION NO	AFT SIDE OF BLOCK FROM AFT REF PT (mm)	HEIGHT OF BLOCK (AFT SIDE (mm)	HEIGHT OF BLOCK (FWD SIDE (mm)	BEARING PRESSURE PER BLOCK (KG/CM^2)
1	1	11295	0	18	SEE GN 16
	2	11295	0	18	SEE GN 16
	3	11295	0	18	12.692 (SEE GN 16)
2	1	12145	26	49	21.277
	2	12755	41	64	33.898
	3				
3	1	13945	71	94	11.860
	2	14555	87	110	4.831
	3	13336	56	79	19.748
4	1	15745	117	140	16.055
	2	16355	132	155	18.751
	3	15136	102	125	11.965
5	1	17545	162	186	14.497
	2	18155	178	201	14.498
	3	16936	147	170	14.228
6	1	19345	208	231	14.490
	2	19955	224	247	15.125
	3	18736	193	216	13.404
7	1	21145	254	277	14.030
	2	21755	269	293	14.407
	3	20536	238	261	13.369
8	1	22945	300	323	13.831
	2	23555	315	338	14.191
	3	22336	284	307	13.266
9	1	24745	345	368	13.039
	2	25355	361	384	13.313
	3	24136	330	353	12.650
10	1	26545	391	414	14.361
	2	27155	406	430	14.577
	3	25936	375	399	14.151
11	1	28345	437	460	7.819
	2	28955	452	475	7.938
	3	27736	421	444	7.695
12	1	30145	482	505	23.393
	2	30755	497	521	23.501
	3	29536	467	490	23.657
13	1	38545	696	725	20.784
	2	39155	715	744	20.667
	3	37936	680	703	21.968
14	1	41545	792	822	7.102
	2	42155	812	842	10.261
	3	40936	773	803	1.269
15	1				
	2				
3(7)	3				
16	1	54745	1221	1251	29.170
	2	55355	1241	1271	26.783
	3	54136	1201	1231	12.479
17	1	56545	1279	1310	5.599
	2	57155	1299	1329	5.458
	3				

5(4)

2(5)

2(5)

LIST OF DOCKING PLUGS IN SHELL ●					
NO.	SIDE	FWD OR AFT	FRAME	FWD OF AFT REF POINT	DIST OFF CL SHIP
1	STBD	FWD	82	11519mm	150mm
2	STBD	FWD	82	11770mm	360mm
3	STBD	FWD	79	13693mm	1316mm
4	PORT	FWD	79	13693mm	1291mm
5	STBD	FWD	72	17535mm	1258mm
6	PORT	FWD	73	17242mm	1217mm
7	STBD	FWD	49	31467mm	2765mm
8	PORT	FWD	49	31467mm	2765mm
9	STBD	FWD	48	32109mm	300mm
10	PORT	FWD	47	32697mm	2790mm
11	STBD	FWD	47	32702mm	2790mm
12	PORT	FWD	39	37512mm	2900mm
13	STBD	FWD	39	37512mm	2810mm
14	STBD	FWD	34	40500mm	315mm
15	PORT	FWD	29	43422mm	2740mm
16	STBD	FWD	29	43397mm	2650mm
17	PORT	FWD	20	48748mm	160mm
18	STBD	FWD	20	48748mm	170mm
19	STBD	FWD	19	49387mm	765mm
20	PORT	FWD	13	52944mm	135mm
21	STBD	FWD	13	52944mm	135mm
22	STBD	FWD	7	56479mm	120mm

LIST OF DRAIN PLUGS IN SHELL ●					
NO	SIDE	FWD OR AFT	FRAME	FWD OF AFT REF POINT	DIST OFF CL SHIP
1	S	FWD	88	8300mm	480mm

LIST OF OPENINGS IN SHELL BELOW DWL									
NO.	SERVICE	SIZE OF PENETRATION	SIDE	FWD OR AFT	FRAME	FWD OF AFT REF POINT	DISTANCE OFF CL SHIP	HEIGHT ABV KEEL BOTTOM	REFERENCE
1	SCIENTIFIC SEAWATER DISCHARGE	150mm DIA	S	124 FWD	12	53526mm	2259mm	2966mm	
2	SCIENTIFIC SEAWATER DISCHARGE	150mm DIA	S	124 FWD	12	53526mm	300mm	0mm	
3	AUX. S.W. COOLING DISCHARGE	150mm DIA	P	250 FWD	57	26652mm	6431mm	5290mm	
4	MAIN SEAWATER DISCHARGE	170mm DIA	P/S	410 FWD	72	17812mm	6123mm	5662mm	
5	SEACHEST SUCTION	925x520	P/S	284 FWD	18	50086mm	2766mm	1735mm	
6	SEACHEST SUCTION	925x520	P/S	891 FWD	18	50693mm	2766mm	1719mm	
7	SEACHEST SUCTION	925x520	P/S	1498 FWD	18	51300mm	2964mm	1702mm	
8	SEACHEST SUCTION	925x520	P/S	2105 FWD	18	51907mm	2964mm	1686mm	

DWG NO. OD-085-FA04 SH 6

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1944	3B213	D	OD	085	FA04	006	05
ESTIMATE NO	SCALE		FILE R:\M279\FUNCTIONAL DESIGN\IN WORK\HULLDWG			SHEET 6 OF 7	
00-104	NONE						

PLOT: 1=1

TABLE FOR KEEL BLOCK NO. 1-17					
BLK NO	DOCKING POSITION NO	AFT SIDE OF BLOCK FROM AFT REF PT	HEIGHT OF BLOCK (AFT SIDE	HEIGHT OF BLOCK (FWD SIDE	BEARING PRESSURE PER BLOCK (psi)
		(FEET-INCHES-EIGHTHS)			
1	1	37-0-5+	0-0-0	0-0-5+	SEE GN 16
	2	37-0-5+	0-0-0	0-0-5+	SEE GN 16
	3	37-0-5+	0-0-0	0-0-5+	180.5 (SEE GN 16)
2	1	39-10-1	0-1-0	0-1-7+	302.6
	2	41-10-1	0-1-5	0-2-4	482.1
	3				
3	1	45-9-0	0-2-6+	0-3-5+	168.7
	2	47-9-0	0-3-3+	0-4-2+	68.7
	3	43-9-0	0-2-1+	0-3-1	280.9
4	1	51-7-7	0-4-5	0-5-4	228.4
	2	53-7-7	0-5-1+	0-6-1	266.7
	3	49-7-7	0-4-0	0-4-7+	170.2
5	1	57-6-6	0-6-3	0-7-2+	206.2
	2	59-6-6	0-7-0	0-7-7+	206.2
	3	55-6-6	0-5-6+	0-6-5+	202.4
6	1	63-5-5	0-8-1+	0-9-1	206.1
	2	65-5-5	0-8-6+	0-9-6	215.1
	3	61-5-5	0-7-5	0-8-4	190.6
7	1	69-4-4	0-10-0	0-10-7	199.6
	2	71-4-4	0-10-4+	0-11-4+	204.9
	3	67-4-4	0-9-3	0-10-2	190.1
8	1	75-3-3	0-11-6+	1-0-5+	196.7
	2	77-3-3	1-0-3	1-1-2+	201.8
	3	73-3-3	0-11-1+	1-0-0+	188.7
9	1	81-2-2	1-1-4+	1-2-4	185.5
	2	83-2-2	1-2-1+	1-3-1	189.4
	3	79-2-2	1-1-0	1-1-7	179.9
10	1	87-1-1	1-3-3	1-4-2+	204.3
	2	89-1-1	1-4-0	1-4-7+	207.3
	3	85-1-1	1-2-6	1-3-5+	201.3
11	1	93-0-0	1-5-1+	1-6-1	111.2
	2	95-0-0	1-5-6+	1-6-5+	112.9
	3	91-0-0	1-4-4+	1-5-4	109.4
12	1	98-10-6	1-7-0	1-7-7	332.7
	2	100-10-7	1-7-4+	1-8-4	334.3
	3	96-10-7	1-6-3	1-7-2+	336.5
13	1	126-5-4	2-3-3	2-4-4+	295.6
	2	128-5-4	2-4-1	2-5-2+	294.0
	3	124-5-4	2-2-6	2-3-5+	312.5
14	1	136-3-5	2-7-1+	2-8-3	101.0
	2	138-3-5	2-8-0	2-9-1+	145.9
	3	134-3-5	2-6-3+	2-7-5	18.0
15 △3	1				
	2				
	3				
16	1	179-7-3	4-0-0+	4-1-2	414.9
	2	181-7-3	4-0-7	4-2-0+	380.9
	3	177-7-3	3-11-2+	4-0-3+	177.5
17	1	185-6-1	4-2-3	4-3-4+	79.6
	2	187-6-2	4-3-1	4-4-2+	77.6
	3				

SIDE BLOCK POSITION NO. 1

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE (FEET-INCHES-EIGHTHS)							
	FWD INBD EDGE	FWD MIDSPAN	FWD OUTBD EDGE	AFT INBD EDGE	AFT MIDSPAN	AFT OUTBD EDGE	LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT	BEARING PRESSURES PER BLOCK (psi)
#1 IB	2-3-5	2-5-0+	2-6-7	2-2-5	2-4-1	2-5-7+	114-2-1	204.5
#2 IB	2-11-3+	3-1-1+	3-3-1	2-10-1+	2-11-6+	3-1-5+	131-10-5	23.8
#3 IB	3-2-3	3-4-2+	3-6-6	3-1-2+	3-3-1	3-5-2+	139-9-1	203.2
#4 IB	3-10-2+	4-2-1+	4-8-2+	3-8-6	4-0-1	4-5-3+	157-5-6	238.1

SIDE BLOCK POSITION NO. 2

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE (FEET-INCHES-EIGHTHS)							
	FWD INBD EDGE	FWD MIDSPAN	FWD OUTBD EDGE	AFT INBD EDGE	AFT MIDSPAN	AFT OUTBD EDGE	LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT	BEARING PRESSURES PER BLOCK (psi)
#1 OB	14-2-2	14-5-2+	14-9-7+	14-10-2+	15-0-6+	15-4-6+	41-4-4	SEE G.N. 15
#1 IB	2-4-3	2-5-6+	2-7-5	2-3-2	2-4-5+	2-6-4+	116-1-6	202.8
#2 IB	3-0-2	3-2-0	3-4-0	2-11-0	3-0-5+	3-2-5	133-10-2	15.0
#3 IB	3-4-4+	3-6-7+	3-10-0+	3-3-3+	3-5-4+	3-8-2	145-8-0	89.9
#4 IB	3-11-2+	4-3-2+	4-10-1	3-9-6+	4-1-3+	4-7-3	159-5-3	209.2

SIDE BLOCK POSITION NO. 3

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE (FEET-INCHES-EIGHTHS)							
	FWD INBD EDGE	FWD MIDSPAN	FWD OUTBD EDGE	AFT INBD EDGE	AFT MIDSPAN	AFT OUTBD EDGE	LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT	BEARING PRESSURES PER BLOCK (psi)
#1 OB	15-0-6+	15-3-2	15-6-7+	15-7-6+	15-9-6	16-1-1	37-4-7	SEE G.N. 15
#1 IB	2-2-7+	2-4-3	2-6-2	2-2-0+	2-3-5	2-5-4	112-2-4	213.0
#2 IB	2-10-5	3-0-2+	3-2-1+	2-9-2	2-10-7	3-0-6	129-11-0	35.4
#3 IB	3-2-3	3-4-2+	3-6-6	3-1-2+	3-3-1	3-5-2+	139-9-1	209.5
#4 IB	3-9-2	4-0-6	4-6-3+	3-7-5+	3-10-6	4-3-4+	155-6-1	102.4
#5 IB	3-8-7+	3-9-7	4-0-0+	3-7-3+	3-8-4+	3-10-6+	161-5-0	201.6

△5 1

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1944	3B213	D	OD	085	FA04	007	05
ESTIMATE NO 00-104	SCALE NONE		FILE R:\M279\FUNCTIONAL DESIGN\IN WORK\HULLDWG			SHEET 7 OF 7	

DWG NO. OD-085-FA04 SH7

PLOT: 1=1